0.7x-3x

*StereoZoom Microscopes

Fixed Power Models

and

StereoZoom Variable Power Models

REFERENCE MANUAL

* Trademark of Bausch & Lomb Optical Co.

BAUSCH & LOMB
OPTICAL COMPANY
ROCHESTER 2, NEW YORK

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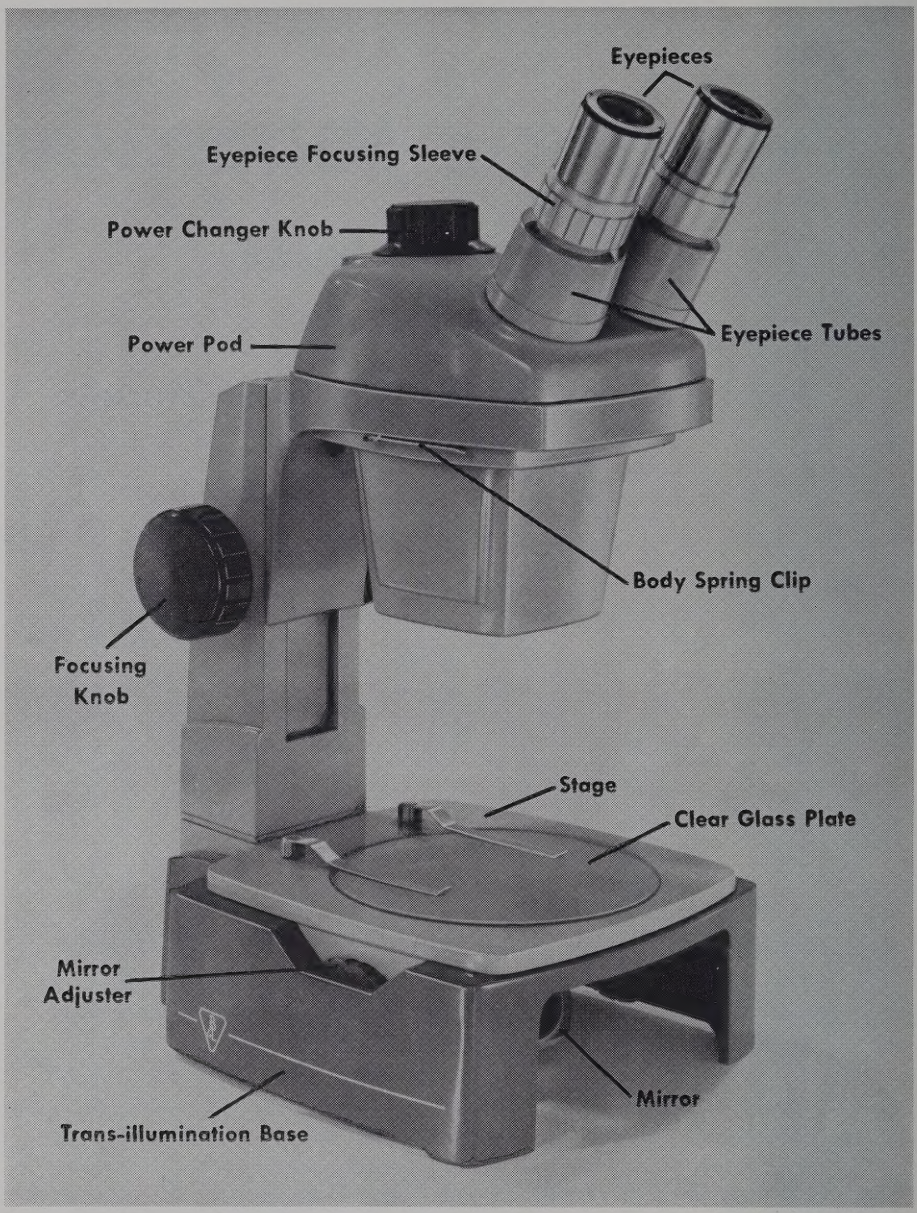

Model BVB-73 StereoZoom Microscope

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BAUSCH & LOMB
StereoZoom MICROSCOPES

DIRECTIONS FOR USE

Unpacking

The microscope is carefully packed to protect it from damage during shipment. Unpack it with similar care, and check it for any evidence of damage in shipment. Check the accessories against your order and packing sheet.

Every shipment of Bausch & Lomb products is in good condition when it leaves the factory. The transportation company, when it accepts the shipment, becomes the consignee's agent and is responsible for safe delivery.

If shipment shows evidence of rough handling, have the agent note on the receipt "Received in bad order," or if concealed damage is revealed after unpacking, call the representative of the transportation company within 48 hours and have him make out a "Bad Order" report. Unless this procedure is followed, you lose all right to recovery from the carrier.

Initial Set-Up

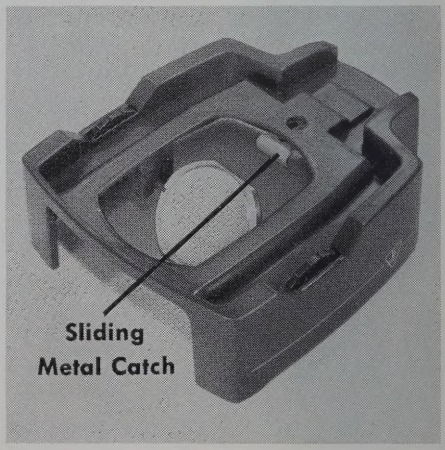
Place the object to be viewed on the stage. Insert a pair of eyepieces in the eyepiece tubes. Direct some light onto the object (see section on "Illumination" for further details).

Space the eyepiece tubes properly for your eyes, so that you are seeing with both eyes at once. This can be checked by alternately closing the left and the right eyes and verifying that both fields are visible without moving the head.

Focus the microscope up or down until the object comes in focus. Close the left eye and focus carefully for the right eye only. Then close the right eye, open the left, and leaving the focusing knob untouched, focus the left eyepiece adapter tube up or down by rotating the eyepiece focusing sleeve until the left image appears in sharp focus. On variable power microscopes, focusing should be done with power changer knob set at lowest magnification position. All optics are Balcoted to improve image contrast and reduce flare.

Figure 1

No. 31-26-84 Base for Trans-illumination



An alternative scheme for focusing may be used. Instead of closing either eye, the left or right side can be blocked off by holding a bit of opaque material below one side or other of the body, and the same basic procedure followed as above. Remember to first focus the whole microscope to suit the right eye, and then focus the left side individually with the threaded eyepiece adapter tube.

The stereomicroscope is now in adjustment for your eyes and may be used with ease and comfort.

Fastening the Base to the Microscope

The Trans-illumination base is fastened to the microscope by a sliding metal catch located underneath the stage. See Fig. 1. Open this catch by sliding it toward the mirror. Remove the circular stage plate from the stage. Set the microscope on the base, and lock in place by sliding the catch back —away from the mirror. Reinsert the stage plate.

Changing the Magnification

Bausch & Lomb's exclusive Stereo-Zoom Power Pod permits you to change the power continuously to exactly the best magnification for a given specimen. For the first time, it becomes possible to see an object whole at low power, and then concentrate on some given detail by increasing the power continuously to the desired value. There are no annoying blind spots or jumps in magnification as the power is changed.

The Power Changer Knob is located at the top of the Pod and may conveniently be operated with the elbow resting on the table surface. It is engraved in steps of 0.1× throughout the power range. In order to maintain good focus while changing the magnification, always make initial focus setting with the power changer knob at the highest magnification position.

If you have a Stereomicroscope with Fixed Power Pod, or if you wish to extend the power range of the Stereo-Zoom Power Pod this can be done by changing the eyepiece power or by adding attachment lenses below the objective. (Fig. 2.) Widefield Eyepieces are available in 10×, 15× and 20×. Power changing attachment lenses are available in 2× and ½×. The former has a working distance of about 1½″. The ½× attachment has a working distance of about 8″, and hence is restricted to use on stands where this distance is attainable.

Eye-guards are available which slip over Wide Field Eyepieces. These guards exclude stray light and orient the eyes in the proper relationship to the eyepieces. The longer eye-guards are for the 10× eyepieces; the shorter ones for the 15× and 20×.

The 10× widefield eyepieces have a long eye-relief, permitting comfortable viewing of the full field while wearing eye glasses. The eye-guards should not be used when wearing eyeglasses.

Illumination

Top lighting for opaque specimens, may be achieved in a number of ways. The method chosen will depend on the nature of the specimen surface. The specimen may be set on the glass stage plate, or if a contrasting background is desired, on the black and white contrast plate.

If the surface is diffusing, (e.g., paper, fabric, wood, insects, crystals, leaves, paint, etc.) some form of oblique lighting is useful. Where a cool diffuse light is required, the Fluorescent Illuminator is recommended. (Fig. 3.)

Figure 2

Model BFB-1 StereoZoom Microscope with the 2× Attachment Lens shown in place below the Fixed Power Pod. The ½× Attachment Lens and Lens Shield, which are interchangeable with the 2× Attachment Lens, are also shown.

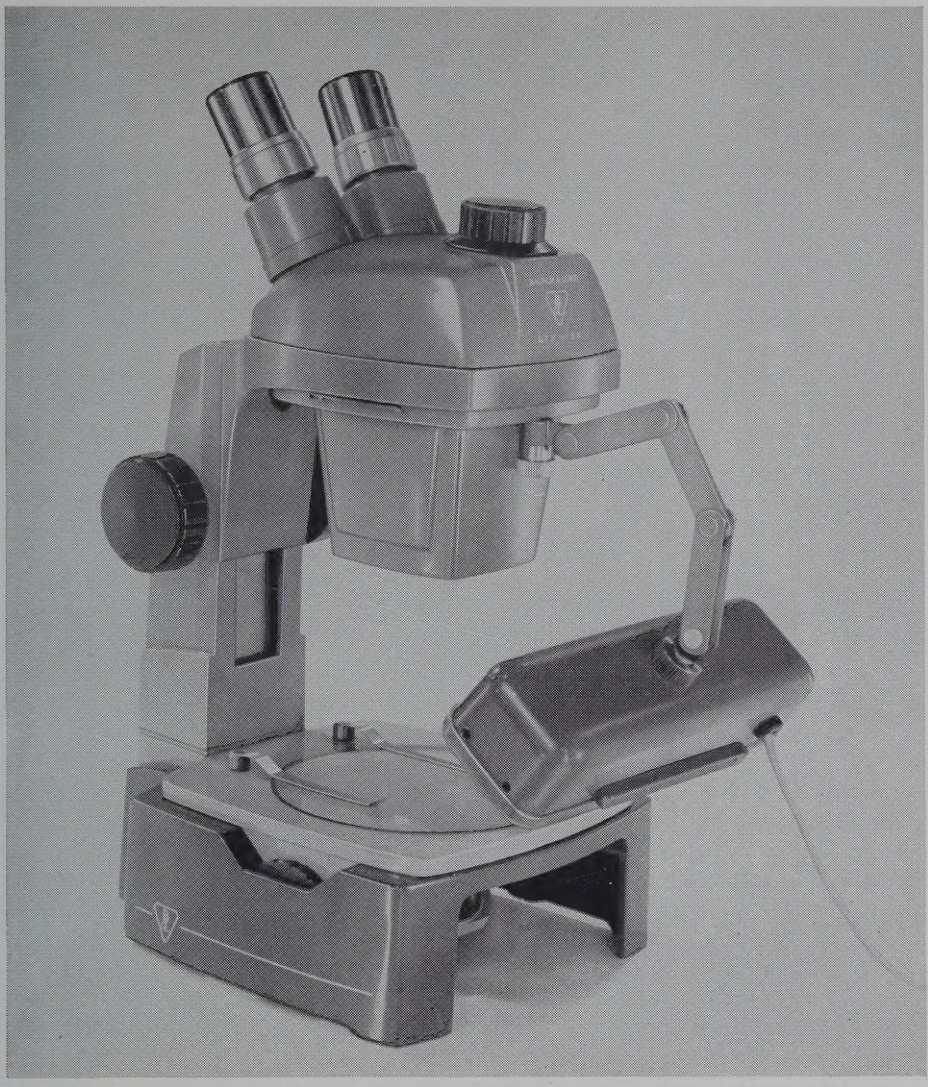


Figure 3

Model BVB-73 with StereoZoom Power Pod, 0.7× thru 3.0×, with Fluorescent Illuminator attached for top oblique lighting.

The Fluorescent Illuminator gives a cool diffuse light of a daylight character. It may be fastened to the Power Pod at the front, as shown, or at either side. This method of mounting keeps the illumination centered regardless of specimen thickness. Optionally it may be mounted on a separate base and used as a movable source.

Where more intense light of less diffuse nature is needed the Reflector Illuminator is recommended. (Fig. 4.) For highly directional spotlight-type illumination, to bring out shadows of surface contours the Nicholas Illuminator is recommended.* (Fig. 5.)

The Nicholas Illuminator is supplied either with a 3-step variable light intensity transformer, or with a single step fixed intensity transformer. Wherever possible, it is desirable to mount the illuminator to the microscope so that the illumination stays centered as the microscope is focused on specimens of different thicknesses.

Straight top lighting, called vertical illumination, sometimes brings out surface detail in polished and etched metallurgical specimens, and also penetrates into steep-walled holes, cracks, or cavities in a specimen.

Any of the 3 attachable lamps may be used in conjunction with the Vertical Illuminator, but if the specimen is highly polished, the more diffuse sources are recommended, in order to provide illumination reasonably free of "hot-spots." Fig. 6 shows the Vertical Illuminator in position for use, with the Nicholas Illuminator attached in its recommended position.

Trans-illumination for transparent or semi-transparent specimens is also available in several ways. This form of lighting requires the Base with clear glass stage plate. Daylight sky illumination is sometimes used, but of course requires a bright day and restricts the use of daytime hours.

The most generally useful form of trans-illumination is supplied by the Fluorescent Illuminator, (Fig. 7) mounted directly beneath the stage in place of the mirror. This gives a cool diffuse lighting which is always in good alignment and has sufficient intensity for almost any type of semi-transparent specimen.

To mount the Fluorescent Illuminator in place of the mirror, remove the clear glass stage plate, and press the mirror sidewards, pulling the opposite spring-loaded support in the opposite direction, thereby releasing the mirror. Turn the keys at the end of the supporting posts horizontal, and slide the illuminator grooves onto these keys, orienting the illuminator with the switch outward. Press all the way in until the locating holes on the end of the illuminator engage the prongs of the spring clip at the rear of the base. The illuminator is now ready to use.

The mirror may, of course, be used in conjunction with any of the available sources of light. Where high brightness is needed, use the concave reflector side. Where lower level diffuse lighting is required, use the plano diffusing mirror. The concave reflector may also be used to produce oblique lighting from below. This is sometimes useful in producing a very striking dark background effect, in which the specimen glows bright in contrast to a dark background.

The Nicholas Illuminator may be fitted into the Port at the rear of the Base for Trans-illumination. Use the diffuse side of the substage mirror for this.

To replace a burned out lamp in the Nicholas Illuminator, remove the two screws which hold the two halves together, draw apart, and remove the lamp by pressing down and turning counterclockwise. Insert a new lamp by the reverse procedure.

*Note. The circular adapter on the jackknife arm for the Nicholas Illuminator is a cone, not a cylinder, hence the mating cone on the Nicholas Illuminator fits into this adapter in one direction only. If it seems to fit too tightly, reverse it.

Figure 4

The Reflector Lamp shown in position for top oblique lighting on Model AVB-12 with StereoZoom Power Pod, 1.0× to 2.0×.

The Reflector Illuminator gives moderately directional lighting of fairly high intensity. It may be fastened to the Power Pod at the front, as shown, or at either side. This method of mounting keeps the illumination centered, regardless of specimen thickness. Optionally it may be mounted on a separate base and used as a movable source.

Figure 5

The Nicholas Illuminator mounted on the Model BFB-1 StereoZoom Microscope.

The Nicholas Illuminator may be mounted directly into the Port in the arm as shown, or if suspended by the jackknife support, at any of 3 other locations, as previously indicated for other sources. These methods of top lighting keep the illumination always centered, regardless of the thickness of the specimen.

Optionally, the illuminator may be fastened directly to the threaded hole in the top of the transformer, and used as a movable source to bring light in from any direction.

Also it may be used for transmitted light by inserting it in the Port at the rear of the base, using the frosted side of the substage mirror to direct the light upward.

Figure 6

Model AVB-73 StereoZoom Microscope with Nicholas Illuminator and Vertical Illuminator. The Vertical Illuminator reflects light directly downward on the specimen. The preferred arrangement, shown above, is to fasten the Nicholas Illuminator to the Power Pod, so that the illumination always stays centered regardless of specimen thickness.

The Vertical Illuminator may be used with any of the four Pods, Fixed Power or StereoZoom variable power. It is shown on the StereoZoom Pod, 0.7× thru 3.0×, in the picture above. It may also be used with other light sources.

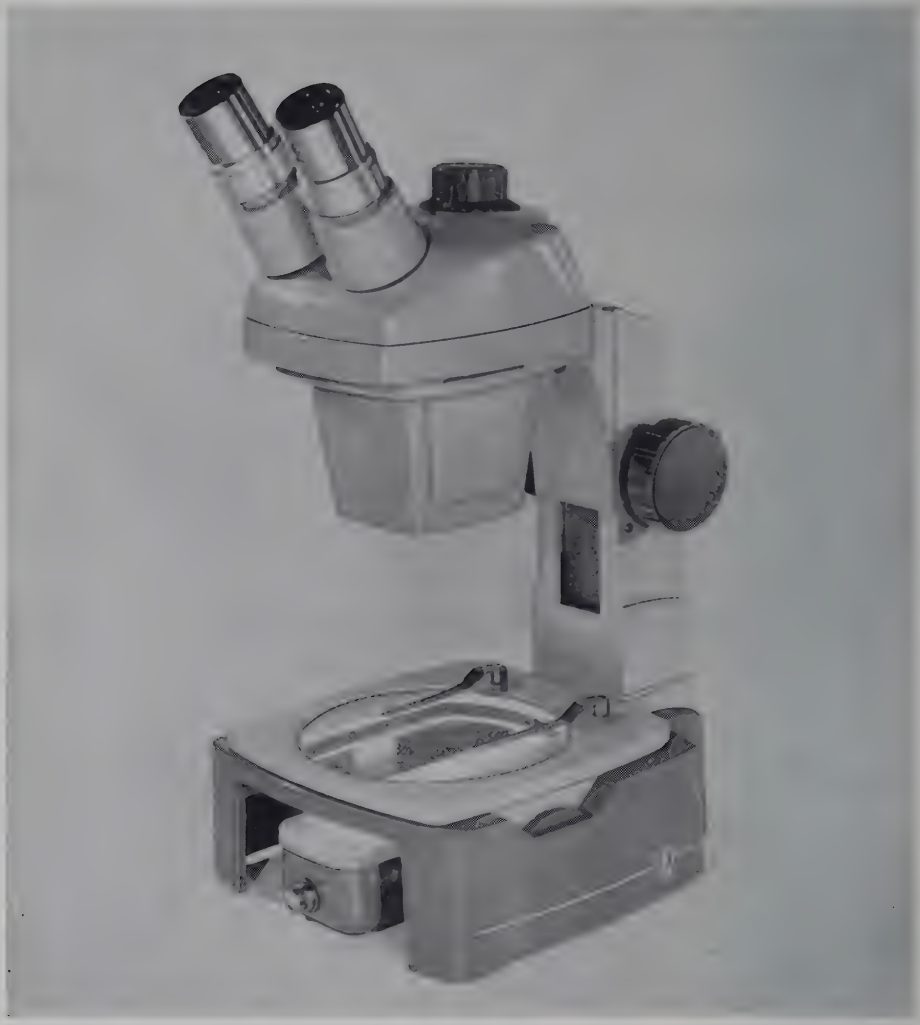


Figure 7

Model BVB-12 with StereoZoom Power Pod, 1.0× thru 2.0×, with Fluorescent Illuminator attached under Stage.

The ideal illumination for transparent or semi-transparent specimens is achieved by mounting the Fluorescent Illuminator in the Base as shown above. With this arrangement the illumination is always centered, requiring no adjustment. The cool daylight type of illumination is very effective for prolonged use of the microscope, particularly with live preparations.

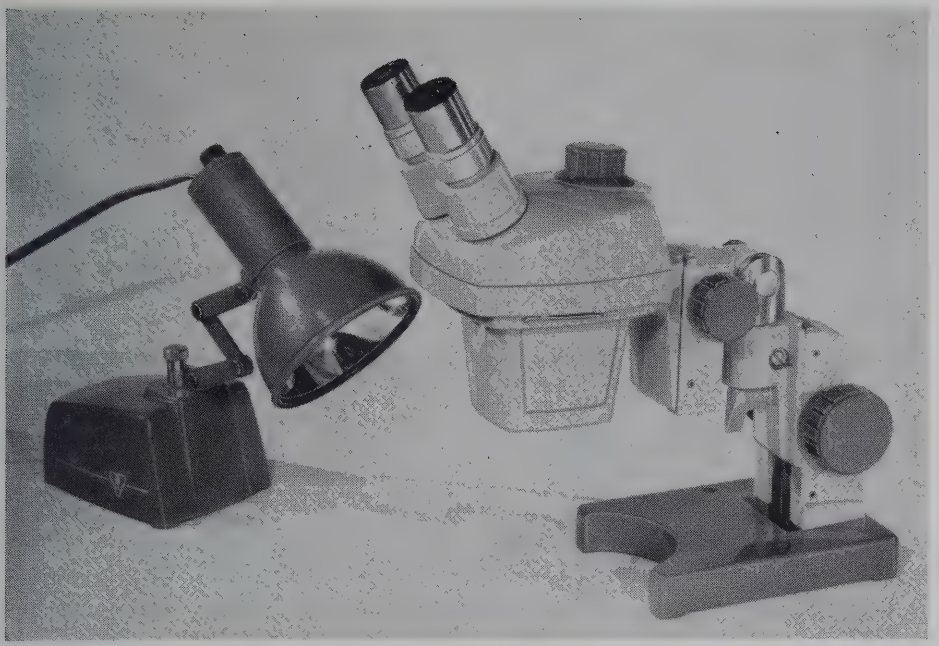


Figure 8

Model KVB-12 StereoZoom Microscope with Reflector Illuminator.

This Model, has a second focusing dovetail slide giving an extended focusing range, and an inclination joint. It is a versatile tool for operation and inspection in industry. Any of the 4 Power Pods, Fixed Power or StereoZoom Variable Power, may be used. The above photo shows the StereoZoom Pod, 1× thru 2×, in use.

Focusing Tension Adjustment

The tension of the focusing mechanism may be adjusted to suit the user's needs. On the back of the stereomicroscope's focusing mechanism there are two small Allen-head screws, located slightly below the centerline of the focusing knobs. By turning these screws slightly clockwise or counterclockwise the tension will be increased or decreased as desired. Uniform adjustment of the two screws is recommended.

How to Reverse the Power Pod

The Microscope Power Pod may be easily reversed by swinging out the two spring clips at either side of the supporting ring. This unlocks the Pod and it may be lifted out and reversed. Press the spring clips back in place.

Cleaning the Optics

The Power Pod is dust sealed from below, and contains glass dust seals within each eyepiece adapter tube. Do not attempt to disassemble the Power Pod and StereoZoom Power Changer. These have been factory cleaned, aligned, and sealed. Eyepieces should be kept in place at all times to prevent

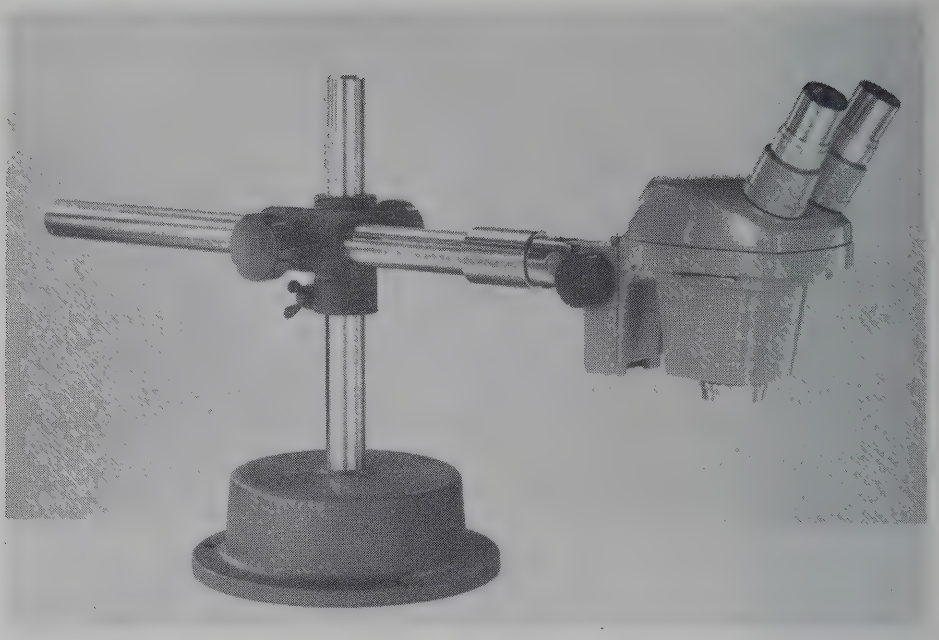


Figure 9

The Model SFB-2 provides coverage of large specimen areas. Shown in use is the Fixed Power Pod, 2×, but any of the 4 Power Pods may be used.

dust settling on the eyepiece dust shields. However, if dust does accumulate here, it can be removed by blowing with a syringe, or by cleaning with a moist cotton swab on a stick.

The external surfaces of the eyepieces and the bottom surface of the Pod may be cleaned in a similar manner. If a lens gets a greasy smear on an external surface it may best be cleaned with a cotton swab moistened with a soap or detergent solution, followed by a dry cotton swab.

Lubrication

The power changer mechanism is permanently lubricated at the factory and requires no periodic lubrication.

The focusing slide should be occasionally wiped clean, using a solvent such as Xylol or alcohol, and relubricated with a light coating of petroleum jelly. Do not lubricate the rack teeth. An occasional cleaning of the rack teeth with a small stiff brush is recommended.

Measuring with the Stereomicroscope

The Stereomicroscope may be used as a measuring instrument by placing a micrometer disc in one of the eyepieces. The three discs designed and particularly recommended for this microscope are the 31-16-08 measuring .001″ intervals with a Power Pod magnification of 3×, the 31-16-04 measur-

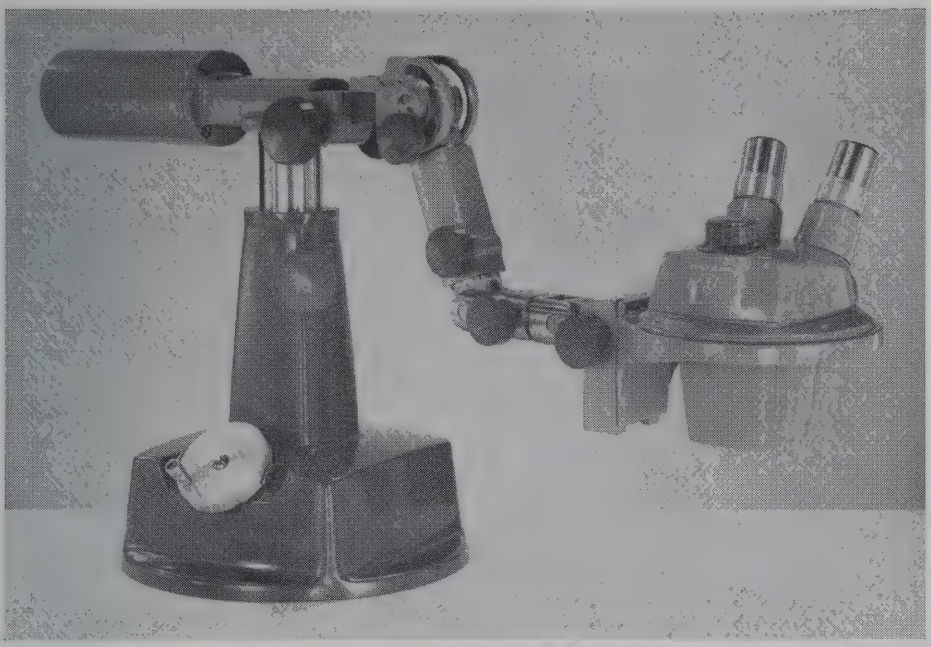


Figure 10

The Model SKVB-73 for extended area coverage and use on sloping surfaces, etc. Shown in use is the StereoZoom Power Pod 0.7× thru 3.0×, but any of the 4 basic Pods may be used. The Pod rotates within its own axis. There are adjustments for orienting the Pod in vertical and horizontal planes.

ing .002″ intervals with a Pod magnification of 2×, the 31-16-07 measuring .005″ intervals with a Pod magnification of 1×. Also available, for calibration of the microscope, is the 31-16-87 Stage Micrometer, engraved in 0.005″ intervals. A variety of other linear and grid pattern discs, as well as special forms, are also available for particular application.

The following procedure may be used to insert the Micrometer Disc in the Widefield Eyepiece:

1. Remove the field diaphragm unit by unscrewing it from the bottom of the eyepiece.

2. Place the Micrometer Disc on top of the field diaphragm with the engraved scale facing down.

3. You will notice that a thin metal lip extends above the upper glass surface. Using a pencil or similar object, apply pressure against the outside of this lip, forcing it inward and downward against the glass. Do this at three more or less symmetrically placed points about the circumference. The reticle disc is now held within the mount securely enough to stay in place under normal conditions of use. A moderate amount of pressure against the opposite (pattern side) face of the disc will push the reticle out of the mount, should it be desired to remove it. If the reticle is to be permanently installed in the eyepiece, one can bend

the metal lip over the glass around the whole circumference by holding the mount at a 45° angle and rolling it on a hard surface such as a table top.

4. Now replace the field diaphragm and disc assembly by screwing it in until the scale comes into sharp focus when viewed through the eyepiece.

To calibrate a Stereomicroscope with the StereoZoom Variable Power Pod, set the 31-16-87 Stage Micrometer on the stage of the microscope, after inserting a micrometer disc in one eyepiece as above described. Line up the two scales so they may be compared for size. Now by varying the magnification by the Power Changer Knob you may obtain the desired scale interval on the specimen. For example, using the 31-16-07 scale, adjust the magnification until exact matching of all lines occurs, or, using the 31-16-04 scale, adjust the magnification until every two intervals in the stage micrometer matches every five intervals in the eyepiece scale. The microscope is now calibrated for direct reading.

To calibrate a Stereomicroscope with Fixed Power Pod, set the 31-16-87 Stage Micrometer on the glass stage, after inserting a micrometer disc in one eyepiece as above described. Line up the two scales so they may be compared for size. Note the ratio of eyepiece scale divisions to the stage micrometer scale intervals. This ratio can then be used to make measurements in the specimen plane. For example if 0.100″ on the stage micrometer scale was found to be 48.7 divisions of an eyepiece scale, then each eyepiece scale interval is $\frac{0.100''}{48.7} = 0.0021''$.

The Stereo Depth Measuring Microscope

The Stereo Depth Measuring Microscope (Fig. 11) utilizes the observer's sense of depth perception to make accurate depth measurements on surface details of an object, without physically touching the object. Ability to use this device varies markedly depending on the type of specimen, the manner in which it is illuminated, and on the individual observer's stereo acuity, so that no definite claims of accuracy can be made. However, to convey an impression of the limiting accuracy attainable, a skilled observer, operating under ideal conditions, should get repeatability of a depth measurement within about ±0.01mm (±0.0004″).

This device is a 20× Stereomicroscope utilizing two identical stereo reticles having concentric dot and ring patterns, to cause image fusion at a definite plane in space. Depth measurement is read on a dial indicator, having a range of 1 inch, and a least reading of 0.001″.

Initial alignment of the device to the observer's eyes is necessary. For this purpose a square alignment pattern engraved on a 1 x 3 inch glass slide is used. This slide is placed centered on the stage of the microscope. Focus the microscope until the right image of the alignment square appears in sharp focus. Then focus the left eyepiece adapter tube by rotating the eyepiece focusing ring until the left image appears in equally sharp focus.

Now carefully and accurately center the alignment square to the left circular dot pattern. Then, with equal care and accuracy, center the right dot pattern to the alignment square.

If the above has been carefully followed, the dot and square should appear to lie in the same plane in space when using the instrument binocularly. If not, use the lateral motion of the right reticle centering screws to bring them into the same plane.

Figure 11

Model ADM-2 Stereo Depth Measuring Microscope.

The microscope is now set to measure depth for your eyes only. Do not disturb any control or adjustment that you have already made, except the focusing knob after this initial set-up. If you accidentally touch the interpupillary adjustment, the left eyepiece focusing adjustment, or the right eyepiece centering adjustment, the depth measurement will likely be subject to error, unless you go back and re-check the above alignment procedure.

MAGNIFICATIONS AND REAL FIELDS

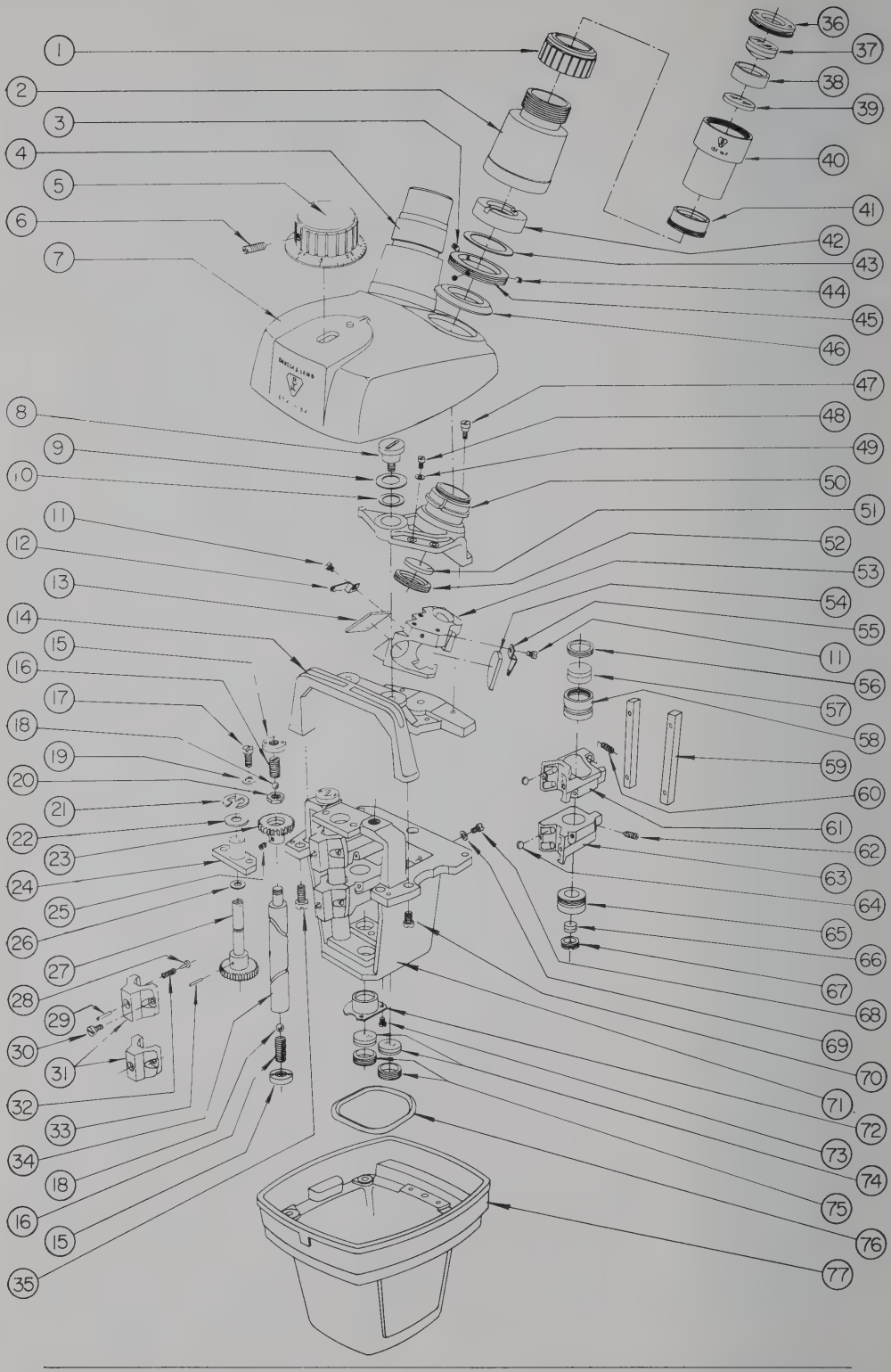
Power Pod Magnification	WIDEFIELD EYEPIECES					
	10×		*15×*		*20×*	
	Mill.	*Inches*	*Mill.*	*Inches*	*Mill.*	*Inches*
0.7	28.6	1.124	24.7	0.973	17.5	0.686
0.8	25.0	0.984	21.6	0.851	15.3	0.600
0.9	22.2	0.874	19.2	0.757	13.6	0.533
1.0	20.0	0.787	17.3	0.681	12.2	0.480
1.1	18.2	0.715	15.7	0.619	11.1	0.436
1.2	16.7	0.656	14.4	0.568	10.2	0.400
1.3	15.4	0.605	13.3	0.524	9.4	0.369
1.4	14.3	0.562	12.3	0.486	8.7	0.343
1.5	13.3	0.525	11.5	0.454	8.1	0.320
1.6	12.5	0.492	10.8	0.426	7.6	0.300
1.7	11.8	0.463	10.2	0.401	7.2	0.282
1.8	11.1	0.437	9.6	0.378	6.8	0.267
1.9	10.5	0.414	9.1	0.358	6.4	0.253
2.0	10.0	0.394	8.7	0.341	6.1	0.240
2.1	9.5	0.375	8.2	0.324	5.8	0.229
2.2	9.1	0.358	7.9	0.310	5.5	0.218
2.3	8.7	0.342	7.5	0.296	5.3	0.209
2.4	8.3	0.328	7.2	0.284	5.1	0.200
2.5	8.0	0.315	6.9	0.272	4.9	0.192
2 6	7.7	0.303	6.7	0.262	4.7	0.185
2.7	7.4	0.291	6.4	0.252	4.5	0.178
2.8	7.1	0.281	6.2	0.243	4.4	0.171
2.9	6.9	0.271	6.0	0.235	4.2	0.166
3.0	6.7	0.262	5.8	0.227	4.1	0.160

If 2× Attachment Lens is used field size is reduced by a factor of 2. If ½× Attachment Lens is used field size is doubled.

ACCESSORIES FOR THE StereoZoom MICROSCOPE

include the following:

31-33-36	Fluorescent Illuminator and base
31-33-22	Reflector Illuminator and base
31-33-53	Nicholas Illuminator, Variable Transformer Base
31-33-56	Nicholas Illuminator, Fixed Transformer Base
31-34-83	Vertical Illuminator
31-05-61-02	10× Paired Widefield Eyepieces
31-05-62-02	15× Paired Widefield Eyepieces
31-05-63-02	20× Paired Widefield Eyepieces
31-50-64	Eye Guards for 15 and 20× Widefield Eyepieces
31-50-68	Eye Guards for 10× Widefield Eyepieces
31-26-87	Black and white contrast plate
31-26-86	Clear glass stage plate
31-26-84-86	Base, with mirror, glass stage plate
31-50-14	Plastic microscope dust cover
31-40-11	Microscope Case
31-31-03	Lamp for Fluorescent Illuminator
31-31-67	Lamp for Reflector Illuminator
31-31-79	Lamp for Nicholas Illuminator
31-16-08	Micrometer Disc to give .001″ at 3×.
31-16-04	Micrometer Disc to give .002″ at 2×
31-16-07	Micrometer Disc to give .005″ at 1×
31-16-87	Stage Micrometer
31-26-18	½× Attachment Lens
31-26-19	2× Attachment Lens
31-26-21	Lens Shield
31-26-91	Fixed Power Pod, 1.0×
31-26-92	Fixed Power Pod, 2.0×
31-26-93	StereoZoom Variable Power Pod 1.0× thru 2.0×
31-26-94	StereoZoom Variable Power Pod 0.7× thru 3.0×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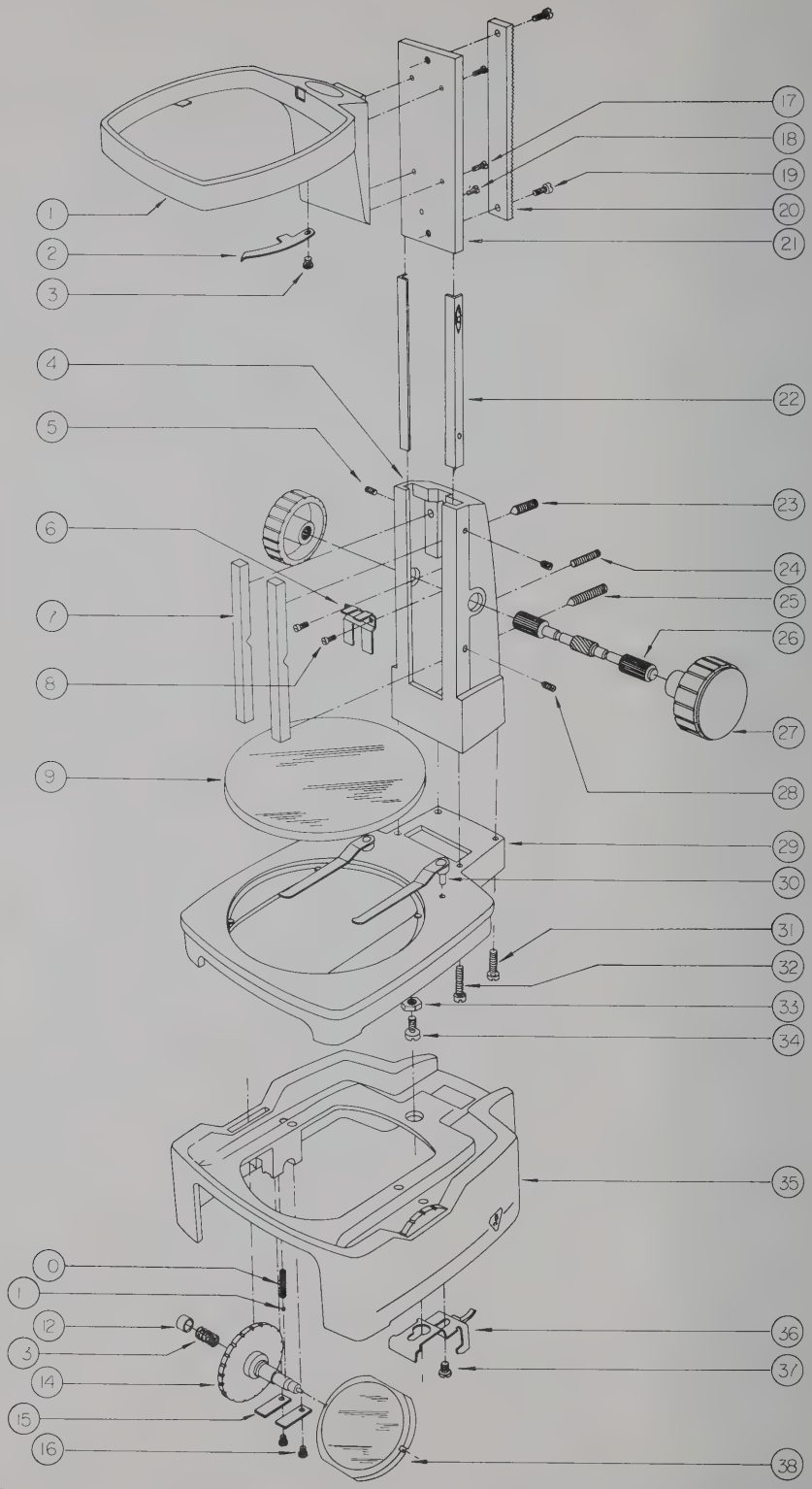
StereoZoom POWER POD

Legend	*Description*	*Drawing No.*
1	Eyepiece Adj. Ring	312694-129
2	Eyepiece Adapter	312694-133
3	2-64 U8T Screw	97226-1210
4	Eyepiece Ring	312694-175
5	Magnification Knob	312694-244
6	Set Screw	312694-236ND
7	Mirror Housing	312694-231
8	Pivot Screw "A"	312694-144
9	F-309 Washer	90008-377
10	F-108 Washer	90008-281
11	2-64 F4S Screw	96206-1213
12	Mirror Clip Assy. (short)	312694-251
13	Mirror "A"	312694-031
14	Eyepiece Mount Support	312694-228
15	Lock Nut	312694-115
16	Bearing Screw	312694-118
17	#6-32 G12S Screw	96208-0601
18	.1562 Steel Ball	312694-152ND
19	F-306 Washer	90008-369
20	Gear Lock Nut	312694-169
21	5133-25 Tru-Arc Retaining Ring	312695-111ND
22	F-310 Washer	90008-378
23	Objective Driven Gear	312694-121
24	Driver Gear Support	312694-239
25	Set Screw	312694-229ND
26	F-305 Washer	90008-368
27	Drive Gear Shaft	312694-139ND
28	Pad "B"	312694-105
29	Lead Screw Follower	312694-103
30	Cap Screw	312694-177ND
31	Objective Mount Cover	312694-225
32	Mount Spring	312694-112
33	I-258 Pin	90011-269
34	Lead Screw	312694-241
35	#6-40 F29S Screw	96206-1629
36	Retainer	310562-103
37	Lens "AB" Assy.	310552-023
38	Spacer	310562-102
39	Lens "C"	310562-024
40	Tube	310562-101
41	Diaphragm	310562-104
42	Dust Seal Retainer	312694-130
43	Dust Seal Washer	312694-234
44	#2-64 U6S Screw	96226-1203
45	Dust Seal Cap	312694-131
46	Dust Seal	312694-132
47	Pivot Screw "B"	312694-145
48	#4-48 F6S Screw	96206-1419
49	F-120 Washer	90008-125
50	Eyepiece Mount Left	312694-138
51	Dust Cover	312694-030
52	Dust Cover Retainer	312694-135
53	Mirror Mount Left	312694-222
54	Mirror "B"	312694-032
55	Mirror Clip Assy. (long)	312694-250
56	Lens "AB" Retainer	312694-108
57	Lens "AB" Assy.	312694-023
58	Lens "AB" Mount	312694-107
59	Guide Bar	312694-106
60	Cover Spring	312694-111
61	Cell Mount "A"	312694-223
62	Set Screw	312694-240ND
63	Cell Mount "B"	312694-224
64	Pad "A"	312694-104
65	Lens "CD" Mount	312694-110
66	Lens "CD" Assy.	312694-026
67	Lens "CD" Retainer	312694-109
68	#6-40 F13S Screw	96206-1609
69	F-306 Washer	90008-369
70	#8-36 F9S Screw	96206-1837
71	Lead Screw Mount	312694-227
72	Lens "EF" Mount	312694-235
73	Sc-89 Screw	90046-143
74	Lens "EF" Assy.	312694-029
75	Lens "EF" Retainer	312694-114
76	Cover Gasket	312694-113
77	Objective Cover	312694-230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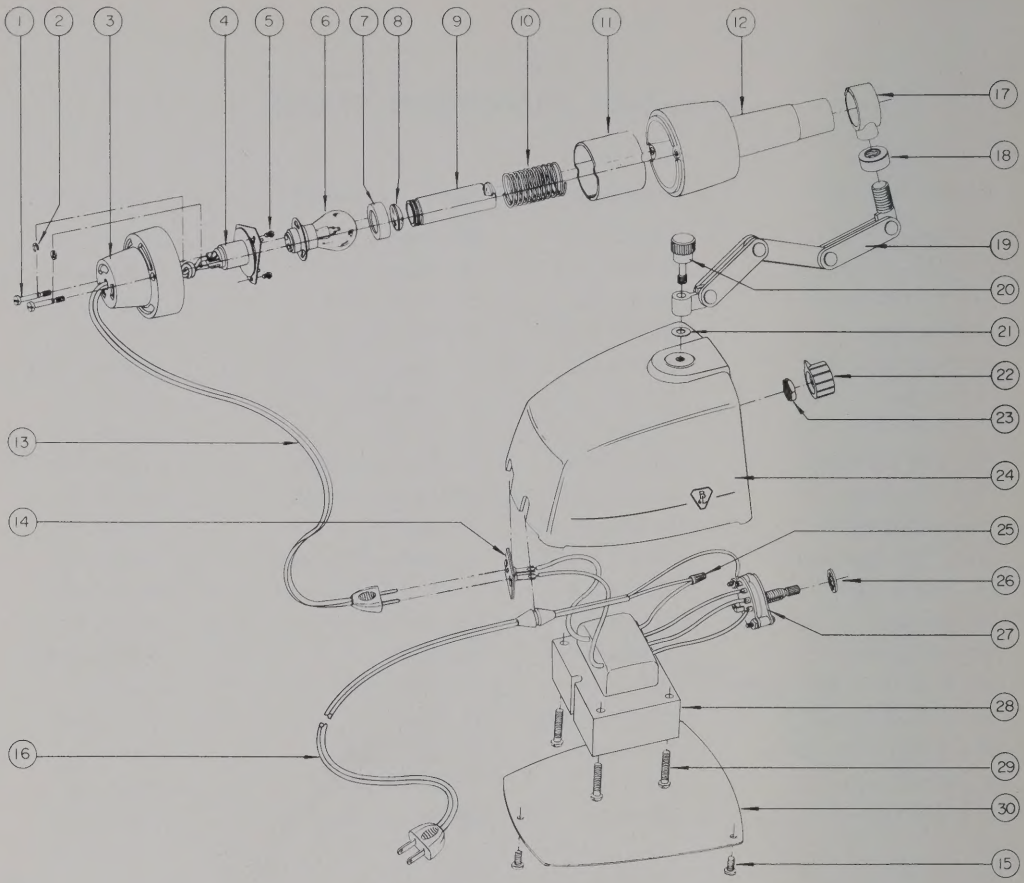
StereoZoom MICROSCOPE STAND

Legend	*Description*	*Drawing No.*
1	Arm	312688-118
2	Lock Lever Left	312688-121
3	SD-119 Screw	90047-182
4	Upright	312688-105
5	Gib Screw "A"	312688-145
6	Spring	312688-132
7	Rear Gib	312688-111
8	4-48 F8S Screw	96206-1410
9	Glass Plate	312688-021
10	Bal Spring	312684-111
11	.125Ø Steel Ball	531271-316ND
12	Spring Cap	312684-104
13	Spring	312684-105
14	Mirror Axle	312684-103
15	Shaft Retainer "A"	632557-107
16	Selftap. Screw	632557-324ND
17	#8-32 F10U Screw	98206-0804
18	SD-5 Screw	90047-14
19	SF-63 Screw	90049-100
20	Rack	312688-109
21	Slide	312688-116
22	Front Gib	312688-112
23	Gib Screw	312688-143
24	Screw	312688-142ND
25	Gib Screw "C"	312688-144
26	Pinion	312688-109
27	Focusing Knob	312688-120
28	Gib Screw "A"	312688-145
29	Base	312688-124
30	Spring Clip Assy.	312688-128
31	8-36 F14S Screw	96206-1832
32	SF82 Screw	90049-119
33	Nut	312688-103ND
34	SF80 Screw	90049-117
35	Base	312684-102
36	Base Lock	312684-106
37	SF-79 Screw	90049-116
38	Mirror Assy.	312684-108



NICHOLAS ILLUMINATOR

Legend	*Description*	*Drawing No.*
1	Screw	313353-135
2	Tru Arc Retaining Ring	313353-128ND
3	Lamp Mount	313353-134
4	Lampholder	313353-136ND
5	Screw	313353-147ND
6	Lamp	313179-101ND
7	Retainer	313353-106
8	Lens A	313353-021
9	Lens Barrel and Lens B Assy.	313353-149ND
10	Spring	313353-107
11	Shield	313353-148
12	Lens Mount Assy.	313353-132
13	LW-91 Cord Set	313353-119ND
14	Interlock Connector	313353-111
15	Screw	313353-150ND
16	Line Cord Assy.	313353-115
17	Adapter	313353-109
18	Linkage Locknut	313336-107
19	Linkage	313336-107
20	Linkage Mount Screw	313336-107
21	Washer	313353-143
22	Selector Knob	313353-146
23	Switch Nut	313353-125
24	Base	313336-101
25	Wire Connector	313353-123ND
26	Star Washer	313353-125
27	Selector Switch	313353-125
28	Transformer	313353-112
29	Screw	313353-151ND
30	Cover	313353-110

THESE DIRECTIONS or instructions do not presume to cover all details, variations, or changes in this equipment nor to provide for all possible contingencies to be met in connection with installation or use. The Bausch & Lomb Optical Co. is desirous of hearing of any particular problems that arise that are not covered to the Purchaser's satisfaction.

RESPONSIBILITY FOR DELIVERY. Every shipment of Bausch & Lomb products is in good condition when it leaves the factory. The transportation company, when it accepts the shipment, becomes the consignee's agent and is responsible for safe delivery.

If shipment shows evidence of rough handling, have the agent note on the receipt "Received in bad order"; or if "concealed damage" is revealed after unpacking, call the representative of the transportation company within 48 hours and have him make out a "Bad order" report. Unless this procedure is followed, you lose all right to recovery from the carrier. —*Bausch & Lomb Optical Co.*

Illustrations shown herein are of Bausch & Lomb products current at the time of this printing. However, due to our constant efforts to improve and refine, we reserve the right to supply products that may differ slightly from those shown in accompanying illustrations.

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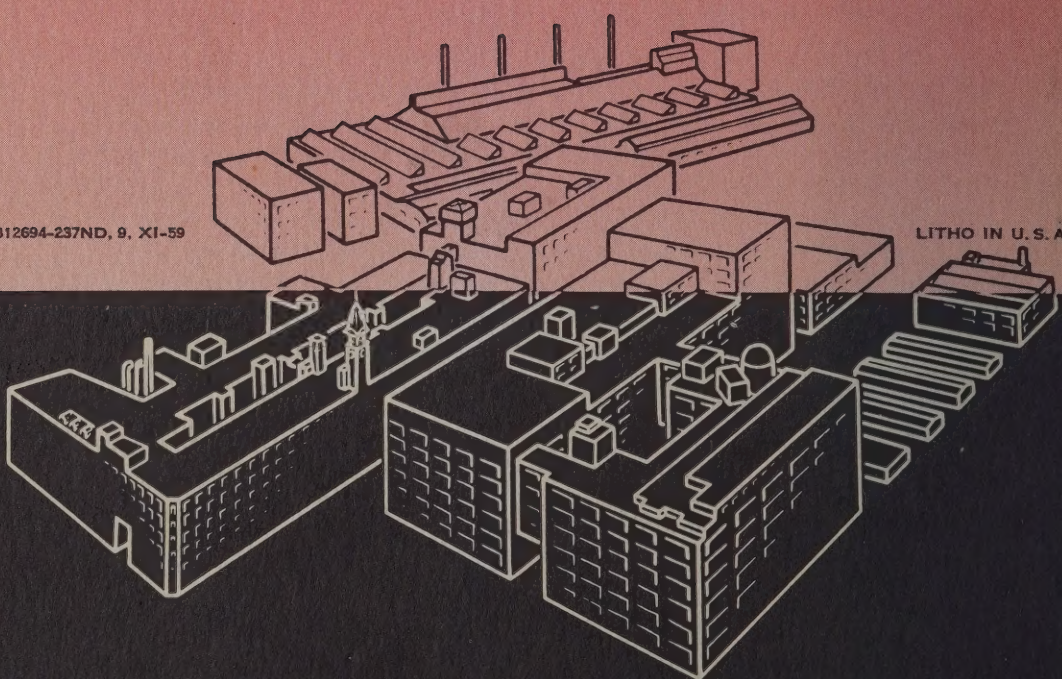
Sales offices are in many of the larger cities.



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